PCT/CA03/00339
What is claimed is:

1.   A system for handling data requests from mobile devices, the system

comprising:

5   a memory operable to store data requests received from at least one mobile
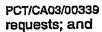
device;

a state prediction module operable to access the memory and predict a first

forecasted data request for a mobile device based on the stored data requests; and

a push module operable to receive the first forecasted data request from the

10   state prediction module and in response request and receive first response data ·

related to the first forecasted data request and prepare the first response data for

transmission to the mobile device over a wireless network.

2.   The system of claim 1, wherein the first forecasted data request is

predicted in response to receiving a data request from the mobile device.

15   3.   The system of claim 2, wherein the state prediction module is further

operable to generate prediction data based on the stored data requests, and to

update the prediction data based on the reception of a prediction notification

received from the mobile device in response to the first response data.

4.   The system of claim 1, wherein the state prediction module is further

20   operable to predict the first forecasted data request independent of a data request

received from the mobile device.

5.   The system of claim 4, wherein:

the state prediction module is further operable to receive a data request from

the mobile device and in response access the memory and predict a second

25   forecasted data request based on the received data request and the stored data

AMENDED SHEET

PCT/CA03/00339
requests; and

the push module is further operable to receive the received data request and

the second forecasted data request from the state prediction module and in

response request and receive second response data related to the received data

5   request and the second forecasted data request and prepare the second response

data for transmission to the mobile device over a wireless network.

6.   The system of claim 4, wherein the state prediction module is further

operable to predict the first forecasted data request on a periodic basis.

7.   The system of claim 5, wherein the state prediction module is further

10   operable to select prediction modes according to the identified subset of stored data.

8.   The system of claim 7, wherein the prediction modes comprise:

an atomic mode that operates on stored data requests specific to the identity

of the mobile device; and

a group mode that operates on stored data requests specific to a plurality of

15   mobile devices.

9.   The system of claim 5, wherein the state prediction module comprises

a Markov chain module operable to predict the first and second forecasted data

requests.

10.   The system of claim 5, wherein the second forecasted data request

20   comprises a set of consecutive data requests and consecutive response data

referenced from the received data request.

11.   A computer implemented method for handling data requests from
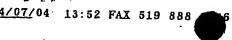
mobile devices, the method comprising:

receiving and storing data requests received from the mobile devices;

25   comparing a received data request from a mobile device to prediction data to

41

Empf zeit 07/0/ AMENDED SHEET

PCT/CA03/00339
predict forecasted data requests based on the comparison;

requesting and receiving response data related to the received data request

and the forecasted data requests; and

preparing the response data for transmission to the mobile device over a

5   wireless network.

12.   The method of claim 11, further comprising the steps of:

identifying the mobile device from the data request;

identifying a subset of prediction data based on the identity of the mobile

device; and

10   comparing the subset of stored data requests to the received data request to

predict the forecasted data requests.

13.   The method of claim 12, further comprising the steps of:

assigning a probability value to the forecasted data requests;

comparing the probability value to a threshold;

15   if the probability value does not exceed the threshold, then:

expanding the subset of prediction data to include data requests from

other mobile devices; and

predicting further forecasted data requests based on the expanded

prediction data.

20   14.   The method of claim 11, wherein the step of comparing a received

data request from a mobile device to prediction data to predict forecasted data

requests based on the comparison comprises the steps of:

selecting a set of states having a transition probability from a current

mobile device state greater than a selection probability threshold;

25   incrementing the set of states until the set of states transition

42

BEST AVAILABLE COPY

PCT/CA03/00339
probability from the current mobile device state is less than the selection probability
threshold.

    15.   . The method of claim 14, wherein the step of comparing a received
data request from a mobile device to prediction data to predict forecasted data

5   requests based on the comparison further comprises the steps of:

      determining a cardinality of the set of states;

      comparing the cardinality of the set of states to a maximum depth;

      if the cardinality of the set of states exceeds the maximum depth, then
adjusting the set of states.

10   16.   The method of claim 15, wherein the step of adjusting the set of states
comprises:

      limiting the set of states to the maximum depth; and

      selecting a subset of the set of states such that the transition probability from
the current mobile device state is maximized.

15   17.   The method of claim 14, further comprising the step of incrementing
the selection probability threshold after each increment to the set of states.

    18.   The method of claim 11, further comprising the step of predicting an
independent forecasted data request for a mobile device independent of a data
·request received from the mobile device.

20   19.   The system of claim 18, further comprising the step of receiving a
successful prediction notification from the mobile device and updating the prediction
data based on the successful prediction notification.

    20.   The system of claim 18, wherein the step of predicting an independent
forecasted data request is performed on a periodic basis.

43

Fmnf ꞊ｰᵢ+ｰ07/0, AMENDED SHEET